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in the Mid-Atlantic

2011: number five

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FROM THE EDITOR

Lofty Goals for Higher Education

The past few months have certainly been eventful along the East Coast. Here's hoping everyone is recovering suitably from the 100-year earthquake, 6,000-acre smoke-choking swamp fire, and 20-year hurricane and subsequent storms that caused week-long power outages (but, at least, put the fire out).

Through all of that, our focus for this issue has remained, as is so often the case heading into autumn, on schools. From Newport News, Va., to Durham, N.C., we look closely at how designs for higher-education institutions develop from preliminary ideas to construction.

It can take a long time from conception to delivery for institutional facilities. So, many of these school projects were conceived back when we still were hopeful that the economy would be ever-green. The fact that they have all remained on track with an unwavering focus on achieving the highest levels of design excellence, even over the past four years, is heartening. With that in mind, we have tried to examine the processes for each project by slicing these evolving projects into their respective constituent parts.

In Newport News, Perkins + Will and Rancorn Wildman Architects have been working to master-plan, design, and manage a new high-tech apprentice school for the shipbuilding yard that currently is building the next generation of aircraft carriers. On the other end of the project-delivery continuum is the Duke University Fuqua School of Business, which has been following their 1997 master plan to the letter and now is enjoying the benefits of that longstanding determination.

In Blacksburg, Virginia Tech has teamed with Snøhetta and STV to design an arts center with fully professional performance space and a high-tech research facility. Similarly, in news fresh out of Richmond, Virginia Commonwealth University has brought on Steven Holl Architects to refine that city's connection to the arts. And, at William & Mary, we get a glimpse into one of the most comprehensive campus WiFi systems in the country.

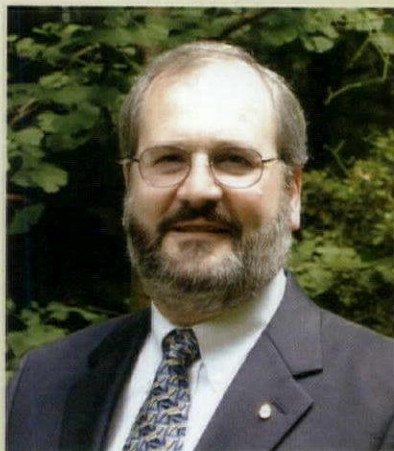
Further, with the hope that the apparent gradual improvement in the economy will turn into a full-blown construction-market recovery in the coming year, *Inform* has turned some attention to the upcoming Architecture Exchange East (ArchEX) program for ideas on preparing for better, busier times.

Certainly by now everyone is well aware of the demand for environmentally sensitive design. But have you thought of the thousands of ways Mother Nature has been working with supreme efficiency and resourcefulness? This process of evaluation is at the heart of *biomimicry*, and we have an exclusive interview with Lisa L. Schmidtke—one of only 14 accredited biomimicry specialists in the world—to tell us the ins and outs of this newest of green-insider sciences.

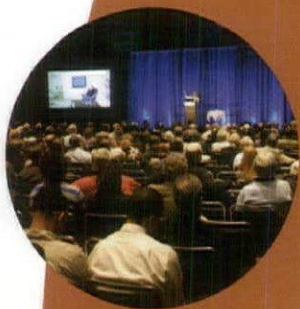
Also within these pages are three separate articles sharing the insights of an architect, Michelle Kaufmann, who has moved beyond the debilitating recession to re-emerge from the ashes of seeming defeat. (Incidentally, she will also be the ArchEX keynote speaker in Richmond this coming November.)

I suppose I would be remiss if I did not mention also that this is my first effort as the editor of *Inform*. I follow in the able footsteps of founding editor Vernon Mays and, most recently, Bill Richards. And, as both have told me they certainly did, I look forward to working with the *Inform* readers for many years to come.

—Douglas Gordon, Hon. AIA



EXHIBITORS



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Michelle Kaufmann, LEED-AP

Michelle Kaufmann Studios,
San Francisco

Architecture Exchange East
Keynote Speaker



Michelle Kaufmann has been a pioneer in prefabricated, high-end, net-zero home design and construction, and is no stranger to the last three years of market adversity. She will deliver the keynote address Thursday, November 3, 2011, at ArchEX in Richmond. Here she offers a sampling of the message she will deliver—as an “architect, advocate, optimist”—on “Simplicity: Reinventing Our Practice.”

6 **M**any architects strive for simplicity in their designs, and yet forget to think about creating simplicity in their lives and how they work. Our profession is not an easy one. It requires a lot of knowledge on many things, much communication, and effective coordination. This often translates to long hours with little pay and not as much time with our families and friends as we would like. Many of us also no longer have as much time to design as we want. We can change this, though. We can rethink how we work to maximize efficiencies for the parts that can be repeated so we can have more time to innovate on other parts. Simplicity in our lives should be designed as much as simplicity in our work.

My last eight years have been extremely interesting and intense, and a journey I am quite thankful for—even the dark days. In the end, the process has opened up a whole new world and way of thinking about our work.

The ups and downs

I started my previous company, Michelle Kaufmann Designs, with a mission to make thoughtful, sustainable design affordable, timely, and, therefore, accessible. I chose modular construction as a means to that end and spent years stalking factories to learn how they build, where their efficiencies and possibilities are, and the potentials of mixing existing systems with new materials and approaches.

Over the last half century in the U.S., we have been using innovation in every industry other than home construction to streamline the delivery process. When you also consider that buildings account for more than 50 percent of the energy consumed in the U.S. and produce about that share of our CO₂-equivalent emissions, you can draw two conclusions: This is insane, and it is an amazing opportunity for architects. We are needed.

With the first few years of Michelle Kaufmann Designs, I felt that call to action from people all over who were interested

in a different model. We had the most amazing clients you could imagine—early adopters who wanted to make the world better and refused to accept the status quo. The demand was there.

Creating the supply, however, was challenging. Existing factories were busy and typically didn't believe our market research. Among more than a dozen manufacturers, we also found a wide range in quality; some of it unacceptable. Eventually, we bought an existing factory and began producing some of our own homes—an amazing learning curve that changed how we thought about designing for an ever-leaner construction process. That really was the best part of having our own factory.

Then, in 2008, came the collapse. Client interest was still there, but money wasn't. Two factories we were working with went bankrupt after we had paid them. This left us in a horrific financial state, forcing us to close. It was devastating. The following year was the worst of my



For this 1,500-sf Northern California House, outdoor rooms expand the sense of space. From factory order to on-site completion took 19 weeks. Insulated structural panels and orientation allowed the home to exceed California Title 24 Energy Compliance by 30 percent. A 5kW photovoltaic roof array makes this a net-zero-energy home.

life. I was like a walking corpse, depressed and in shock. I felt like a failure who could no longer deliver on The Idea.

Calling clients and colleagues to work through the closing process was horrible. Yet those people proved super supportive through the difficulties, even those who were negatively affected themselves, and many whom I had never actually met. There was such a strong sense of community that we were not willing to give up on our ideals and vision. They weren't reaching out for me so much as the promise that rethinking our profession had offered. The more these letters came in, the more I realized that I couldn't give up. I just needed to rethink the model.

Another thing I found difficult was to let go of what I had worked so hard to create. As a part of the closing of my previous company, we had to sell our old pre-configured designs. I loved and cared for those designs as though they were a part of my own blood and tissue. I tried consulting with the company that bought them, but it was too difficult. I didn't agree with things they were changing, so I stopped working with them, which only caused more difficulties.

It was at that point that I really started my next chapter. And I am so thankful now. If I had kept working with the other company as my lifeline, I would have stayed miserable, stuck in a failed business, and would not have moved forward. I don't think about those designs anymore. I no longer have them in my vocabulary or my head, which gives me more room for the current work and reinventing the future. It's funny how things work out. Maybe my mother was right all along—that everything happens for a reason.

A new model

In outlining the new model, we had to define our problematic areas. While popularity of the previous company was helpful for educating people, it was also our downfall. We had grown too quickly. In the critical equation for start-ups—1. Define 2. Refine 3. Scale—we only Defined and Scaled. We thought we could Refine *during* the scaling part. That doesn't work. Too many things were being entrusted to others.

So the next chapter became much like the designs themselves. This time, it was going to be a small, lean team. It is working with the basic business strategy of doing more with less by having only super smart people on the team. Now I am working with the best four people from our previous firm, and we have no intentions of ever getting larger. We are only working with the best factories (e.g., Blazer Industries), doing only net-zero-energy homes, and limiting quantity to focus on quality.

I spend half my time on these projects and the other half working for a large company coming up with a totally new way we can design and build to dramatically reduce time and cost. I am super excited about this work and can't wait until it will be launched publicly. I also spend time working with my favorite organizations, including Architecture for Humanity and the Cradle to Cradle Institute.

I am now happier than I have ever been in my life and working on projects that will have a bigger positive impact on our profession and the environment than I ever could have with the previous company. It took my worst nightmare being realized to find out that what I thought was the best thing actually wasn't.

Leveraging the big box

During this time, I was also fortunate to have spent a day with Yvonne Choinard, the founder of Patagonia. He told me about work he has been doing with Walmart, which on the surface couldn't be a company more opposite to his own. He believes, however, that working with bottom-up companies is good for conceptual proof, but that it takes real scale to make a global difference. If he can help Walmart go to organic foods, for example, then it changes the way the world produces food. I am trying a similar strategy within this current chapter of my career.

It is so exciting to see so many other great companies getting into rethinking construction techniques and design processes to make sustainable buildings accessible to everyone, such as Resolution 4 Architecture, Marmol+Radziner, Project Frog, and Zeta Homes.

While it may be difficult to really believe right now, architects are going to become very, very busy soon. With the projected population increased through 2050, it is estimated that more than a million people are moving to urban environments each week. More buildings, better buildings are essential.

And there is still so much room for reinvention and innovation in our profession. This construction downturn has been a call to action for all of us. Looking to other industries and countries is a huge first step toward re-imagining ourselves and our work. I highly recommend that architects look hard at the product-design and software-design industries for ways to become more efficient.

But more on that in my talk on November 3.

Biomimicry:

The Artful Science That Emulates Nature

As a general concept, biomimicry is anything but new. From clothing—originally derived, one supposes, from cold humans observing warm animals—to advanced propulsion systems being developed today, we have long taken advantage of nature's 3.85 billion years of research and development on Earth.

Only fairly recently, however, has biomimicry become a recognized scientific discipline with its own certification system. In fact, in the entire world, there are currently only 14 certified biomimicry professionals, with certification coming from the Biomimicry Institute. One of those is Lisa L. Schmidke, an associate with Clark Nexsen Architecture and Engineering in Norfolk. Schmidke will be joining Clark Nexsen Vice President Ray Pentecost, FAIA, to lead a workshop in Richmond the afternoon of November 2, 2011, just prior to Architecture Exchange East, to explain the potential of biomimicry to the profession of architecture.

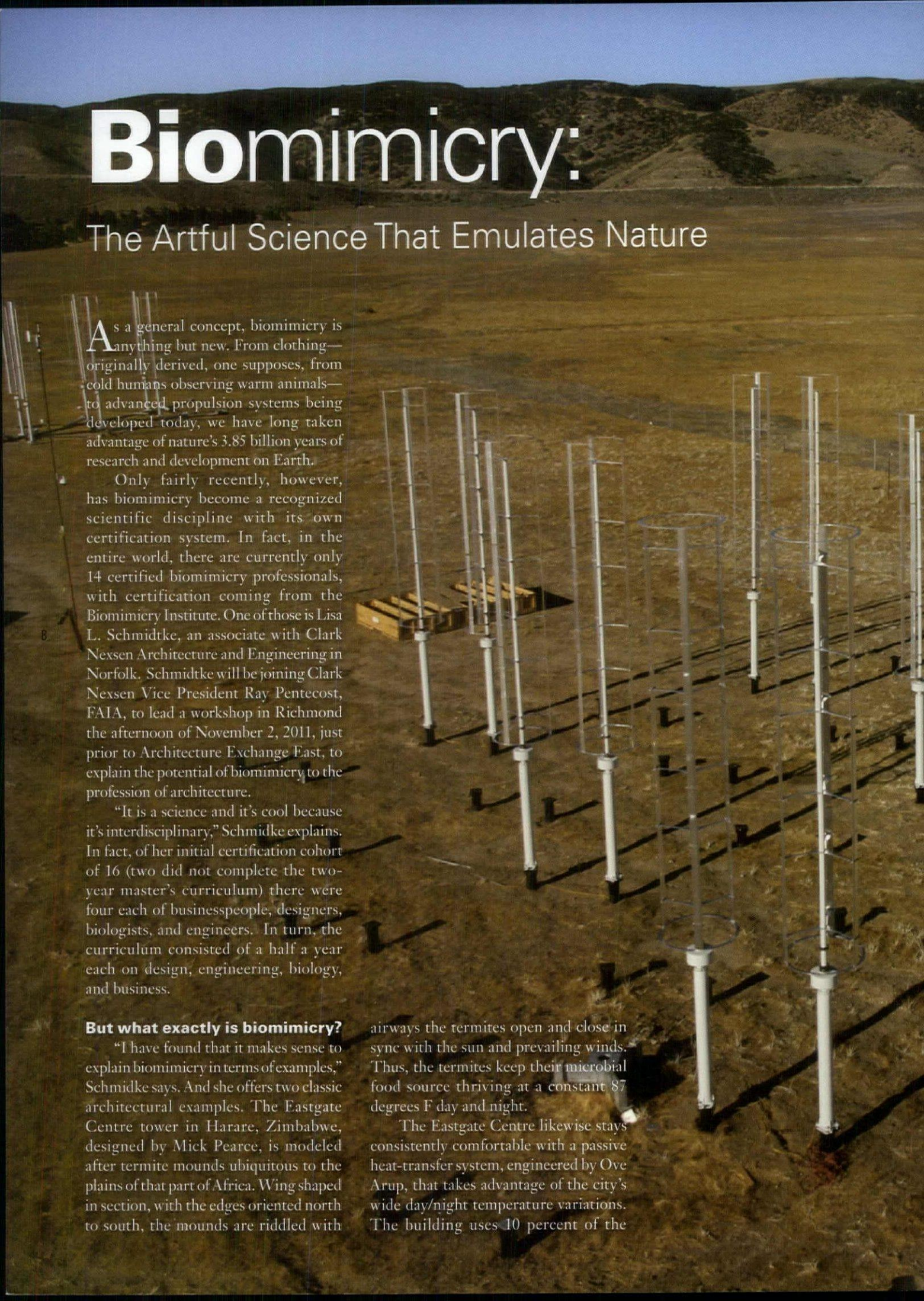
"It is a science and it's cool because it's interdisciplinary," Schmidke explains. In fact, of her initial certification cohort of 16 (two did not complete the two-year master's curriculum) there were four each of businesspeople, designers, biologists, and engineers. In turn, the curriculum consisted of a half a year each on design, engineering, biology, and business.


But what exactly is biomimicry?

"I have found that it makes sense to explain biomimicry in terms of examples," Schmidke says. And she offers two classic architectural examples. The Eastgate Centre tower in Harare, Zimbabwe, designed by Mick Pearce, is modeled after termite mounds ubiquitous to the plains of that part of Africa. Wing shaped in section, with the edges oriented north to south, the mounds are riddled with

airways the termites open and close in sync with the sun and prevailing winds. Thus, the termites keep their microbial food source thriving at a constant 87 degrees F day and night.

The Eastgate Centre likewise stays consistently comfortable with a passive heat-transfer system, engineered by Ove Arup, that takes advantage of the city's wide day/night temperature variations. The building uses 10 percent of the



A large-scale model of vertical-axis wind turbines is set up in a vast, arid desert landscape under a clear blue sky. The model consists of several tall, white, cylindrical towers with horizontal blades, arranged in a staggered grid pattern. Long shadows are cast across the dry, yellowish-brown ground. In the background, rolling hills and mountains are visible. A person is standing near the base of one of the towers for scale.

By analyzing the tail-induced vortexes of schooling fish, researchers at the Caltech Biological Propulsion Laboratory modeled an optimal configuration for vertical-turbine wind-power generators that is 10 times more efficient than blade-powered turbine arrays.

Biomimicry is a process

A lot of the design work in biomimicry is spent evaluating building performance-optimization. "We are not looking at what we want to design—say, a school—but at what we want our design to do—be a part of the instructional experience," Schmidke explains. "You can look at how nature purifies water, provides seasonal shade, ventilates, or prevents fires. And that's how you go about developing design strategies. But first you have to develop a process of evaluating connectivity. Nature doesn't design schools or trains. What nature does know, and that we can learn from, is how to make sea kelp spin with the waves and eliminate drag. Biomimicry is applying that observation, somehow, to building performance."

Schmidke's method of teaching biomimicry to others involves exercises that develop potential design strategies based on observed natural principles. The goals span from finding free energy and managing water to benign recycling of all fabricated materials, she says. "And once you know where your problem areas are, you can look to nature to see how to handle each challenge. So the study of biomimicry just gets your brain going."

"Humans are brilliant," she continues. "Our brains make us stand apart from the 30 million other organisms on Earth. But, in turn, we designers also have to stand apart from our hubris and accept that there are other ways to increase building performance that are gentler and more efficient than what we are used to doing. I'm anxious to see where this discipline will go in the A/E world. But I think architectural design will benefit greatly. And, hopefully, the science will help us *keep* humans as one of those 30 million species on the Earth."

energy of an equivalent yet conventionally conditioned building, according to a Prince Claus Fund evaluation.

Another well-known example is Norman Foster's 30 St. Mary Axe, completed in 2002 in London, which circulates air the way a glass sponge circulates water. Despite firebreaks that are required every sixth floor, the building is effectively ventilated with six chimney-stack shafts. The air stacks,

sandwiched between two layers of glazing, also help insulate the building's exterior. Engineered by Arup, the tower reportedly uses half the energy of a conventional equivalent tower.

"By giving the client these examples, they see that biomimicry is a real entity with real benefits and not some scary new design approach that's going to cost a lot of money," Schmidke says.

Carolina Cottage: A Personal History of the Piazza House

By Margaret Ruth Little

Charlottesville and London, University of Virginia Press

2010, 136 Pages, \$22.95

The “personal history” in the title of this small but richly detailed book is its most distinctive feature. Throughout, the reader meets the author’s grandmother, mother, aunt, and children, among others. At one point, we even get some period context through the eyes of Fredrick Law Olmsted from his tour of the Carolinas in the 1850s. These introspective touches sometimes belie the serious research that went into this study of a vernacular building type of the 18th and 19th centuries, one of the most notable features of which—the integral porch—is experiencing a re-emergent popularity.

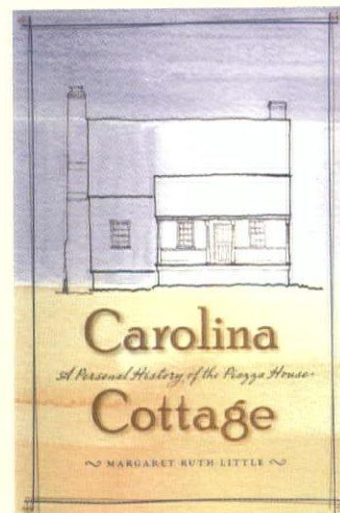
First, though, a brief definition in Margaret Ruth Little’s words:

“The Carolina cottage represents one of the earliest sophisticated domestic forms in the Carolinas. Fully developed by about 1760, it became the dwelling of choice for middling farmers, merchants, and fishermen during the antebellum era.”

From her experience owning the 936-sf Lane House two centuries after it was built in 1775 near Raleigh, N.C., Little discovered the charm of “going out to the pizer and blow a little,” as her grandmother once described enjoying a breeze on the piazza, which was also every family’s social center and public face.

Little’s well-illustrated pages take us through a collection of individual homes, many no longer standing. First in North Carolina, then in South, she describes how the homes were used and why. In the northern state, they were affordable, functional year-round abodes. In the then-more-wealthy South Carolina, the cottages were beachfront or pine barren retreats from the summertime miasma of disease-carrying mosquitoes that plagued the wetland fields.

Anyone looking for an entertaining trip into the past will want to read Ruth Little’s book. Anyone wishing to get a solid grasp of the authentic historic context of Carolina cottage design features—gabled versus hipped roofs, floor plans, rain porches, stranger (aka, preacher) rooms, and even color preferences (light blue to keep away flies)—will want to study this book. —DEG



10

Prefab Green

Michelle Kaufmann and Catherine Remick

Layton, Utah: Gibbs Smith

2009, 176 pages

Prefab Green is a near-perfect example of its genre. You just have to manage your expectations of a book that is half marketing brochure, half serious analytic/academic work making a point, but not quite either. Once you get used to it, though, you can appreciate Kaufmann for what she is: architect businesswoman with a heart of gold and a slew of PowerPoint slides and stunning photographs.

If you’re going to write a book titled *Prefab Green*, you have three challenges: Explain “green” and “prefab” and why you decided to combine the chocolate and the peanut butter. But fundamentally, can prefab be “green”? Heck yes, it can.

Kaufmann iterates five basic principles of ecological design: 1) Smart design, 2) use of eco-materials, 3) energy efficiency, 4) water conservation, and 5) healthy environment. The first third of the book explains 11 elements of smart design, 9 aspects of eco-materials, 6 aspects of energy efficiency, 3 considerations of water conservation, and 4 aspects of healthy environment. This is great stuff for any layman or student. Most professionals have read it a hundred times before.

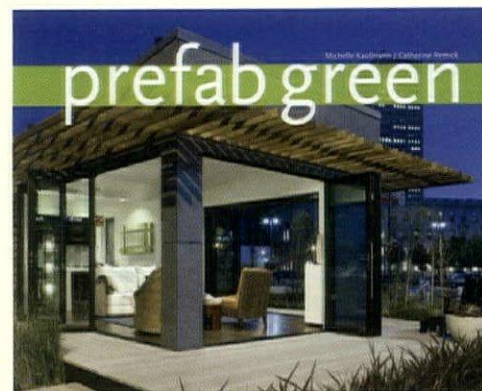
Kaufmann then turns to the heart of the matter: green construction. There is less waste in materials because you can do precision cutting with specialized tools; higher quality control with reliable, known contractors; less fuel used to transport materials and labor to site; and possibly less damage to the construction site itself.

One does occasionally hunger for some significant academic and/or industry analysis to back up many of the assertions in this book. The claim of less waste rings true, though, if only you know how. Besides, it might be a case of: Do what you know is right, build them, and the academic studies will come.

I say that this book is “near-perfect” because it does have its flaws. It’s a bit repetitive for one. And perhaps the lead is buried. We don’t learn till page 158 that “in terms of sustainability, multifamily housing has single-family homes beat. Multifamily communities are more energy efficient, use less land, and are often more pedestrian-friendly.”

What? A whole book about prefab green single family homes, and now you tell me the sustainable action is in multifamily domiciles? Actually that’s probably true, and I would add to her point. If there is one movement that has legs in the U.S. in the 21st century, it is the U.S. military’s interest in making its infrastructure more sustainable, especially if you can lower their utility bills.

—Adam L. Gruen, PhD, Sustainable Development Technology Consultant, Washington, D.C.



The Citizen Architect Is Cool Again

By Nicholas Vlattas, AIA, and Deborah Marquardt

Architects across the country are making news these days solving big problems as volunteers within their communities. For example, a group of young architects and professionals calling themselves Re:Vision Norfolk is encouraging the city to make the downtown more attractive to creative young professionals. They're making Norfolk greener, too, proposing bike paths and urban parks and evaluating the potential of the tired, outdated Waterside Festival Marketplace. When Norfolk's new Half Moone Cruise and Celebration Center lost business, these same volunteers created a summer tourist destination, "Atlantis! A Labyrinth Adventure," that kept revenues flowing.

Virginia firms support hundreds of other causes as well, such as Habitat for Humanity and CANstruction, which raises funds for local food banks.

Architects who inspire

Nicole Hall, AIA, served on the board of directors for Downtown Roanoke, Inc., and the Greater Roanoke Transit Co. while concurrently working at Clark Nexsen, before recently moving to the firm's Charlotte office. She has always been passionate about downtowns. One of her projects, "Roanoke Urban Effect," attracted international submissions to evaluate ideas for Roanoke. Local businesses sponsored the competition, and city officials shared in the results.

Also notable is Baskervill's Bruce Tyler, AIA, who has served on the Richmond City Council since January 2007. With extensive experience as an architect and on civic association and community boards, Tyler has effectively challenged his fellow city leaders and educated them on issues such as school maintenance and ADA compliance.

As problem solvers, architects are uniquely positioned to help people understand master-planning, zoning, and architectural review boards, Tyler says. Those abilities have worked well in concert with his own personal conviction to elevate Richmond from a good place to live and work to a great place, he says.

Firms that aspire

We are also reminded of John Paul C. Hanbury, FAIA, one of Hanbury Evans' founding principals who died in late April. As a young architect, and throughout his life, he set a consummate example as a citizen architect, saving important historic buildings, sometime at his own expense, and rallying the Hampton Roads community around the arts. Along the way, he grew an enduring practice.

Think of these investments as a way to enhance a firm's performance. Volunteering teaches leadership and teamwork

skills, raises morale and recruitment potential, and improves a firm's image. Clark Nexsen encourages employees to get involved, and community involvement often is included in an employee's annual review. The firm has charged Hall's time working on the downtown boards to marketing because it builds community relations, especially in a locale with a new office.

Baskervill encourages volunteerism, too, although there is no formal policy. Often, employees are granted time off from work to help with a particular project. "We just get in a room and decide," says Tyler, who has also served as Baskervill's president.

Because he knew he would be devoting more than 20 hours a week to his city council job, Tyler didn't run for office until he knew the company was in good hands with the new president, he says. And, he cautions, be ever-vigilant not to put yourself in a position that might be interpreted as a conflict of interest.

Set your own firm afire

How should employers support our "citizen architects"? It is a tough question, especially in tough times. Although philanthropy can take many forms, including financial donations, there is something about rolling up one's sleeves, giving personal time, and tapping into every design professional's inner drive for humanity and advocacy.

A quick Internet scan reveals several approaches a firm might take to support volunteerism. (Remember that these are decisions each firm must consider individually, with appropriate counsel.)

- Grant employees a certain number of volunteer hours per fiscal year.
- Stipulate that all volunteer time be during after-work hours.
- Grant time off without pay for volunteer activities.
- Stagger work schedules to allow volunteering.
- Allow employees to use sick, personal, or vacation days for pre-approved activities.
- Permit employees to use company equipment, such as workstations and copiers, for volunteer activities.
- Designate a set block of billable hours, say 1 percent, for pro bono projects.

"The best and most cost effective way to educate the public about what architects do is to encourage architects to serve their communities as volunteers," writes Orlando T. Maione, AIA, in "Citizen Architects: Serving the Community."

Citizen Architects, a national AIA brochure, concurs when it suggests that architects use their "talents, training, and experience to contribute meaningfully, beyond self, to the improvement of the community and human condition."

Seems like a win-win to us.



Power Button

12

William & Mary Is So Very Unwired... and Proud of It

Students and faculty at the College of William & Mary already enjoyed one of the best university wireless Internet systems in the country. As far back as 2005, Intel named it one of the top-50 WiFi-connected universities in the U.S. When students showed up to start classes this past August, though, they found the system was getting even better.

"Currently we probably have 1,200 access points," says University Network Manager Scott Fenstermacher, referring to the wireless transmitters connected throughout the campus to the university's hard-wired Ethernet system. "With the upgrade, we're likely to put in even more."

One reason for so many access points is that speed and connectivity for wireless users—in classes, libraries, some outdoor spaces, and even dorm rooms—depend on a person's proximity to one or more of these wireless access points located throughout the campus. The key factor the William & Mary network team considers, though, is not so much a student's distance from any given access point as the density of students around these transmitters. Because a lot of people are competing for access to the wireless system, a heavily trafficked area will need more access points than areas with fewer users.

Everybody wants wireless

When the school first accommodated wireless Internet access seven years ago, the campus had only 15 access points, Fenstermacher recalls. As the system grew, the network managers learned a few things quickly. One is that everybody—students and faculty alike—tends to prefer wireless connection over plugging in to hard-wired desk-side or wall connections. Second is that system users also want their wireless network to be as robust as their wired network, with the capacity to connect phones, notepads, portable

computers, game stations, or whatever other devices users want to connect.

Students might register media access control (MAC) addresses for as many as 10 different devices on the university wireless system, Fenstermacher says, noting that it is through those MAC addresses that the school's virtual local area network (VLAN) recognizes legitimate wireless Internet users. (William & Mary also allows visitors to obtain VLAN access through a temporary system registration, which is somewhat unusual among other universities' Ethernet-access policies. This one-day access accommodates guest lecturers, vendors, and other people with a legitimate need for on-campus wireless access.)

The William & Mary wireless system is focused mostly on interior spaces. However, just as with the home-based access points, there is some bleed-over from inside transmitters to nearby exterior areas. This means that people



The Wren Building (previous page) is an integral part of William & Mary tradition, as seen from the Sunken Garden.

can access the Internet in places such as the Sunken Garden outside Christopher Wren Hall without the university having to place access points outside where the transmitters would be visible.

William & Mary maintains a Colonial America visual context, Fenstermacher explains. "We're the second-oldest university in the nation. So we can't pop an antenna in anywhere we want wireless service." This is especially true of the Wren building. Although it has burned and been rebuilt three times since it was first completed in 1700, it is still recognized as the oldest academic building in continuous use in the U.S. "We don't want people coming in with shovels outside that building to bury wires," Fenstermacher says.

As with many of the buildings on campus, the Wren Building was last remodeled in the 1930s, following the financial support from John D. Rockefeller Jr. to restore Colonial Williamsburg. Unexpectedly, that created problems for the people installing access points. "In the 1930s, a common interior wall treatment was plaster over expanded-metal lathe," Fenstermacher says. "We found that the embedded metal mesh acted essentially as a radio-frequency shield. It seemed that we couldn't put enough access points in

those buildings. Yet in very similar buildings that had been renovated with drywall, we could get excellent coverage with a third the number of access points.

"Working within all these parameters of visual integrity and existing building conditions became something of an art," he continues. "We walk around with a tablet PC to do RF studies to compile a heat map of coverage, and we have found that we need to be detailed in this analysis. Sometimes you will get a five-bar signal on one side of a dorm room doorway, for instance. But if you walk inside to the far wall of that room, even though it's only a few strides away, you might go down to zero."

Students take these modest limitations in stride. "Wireless Internet access is generally good across campus in classrooms and the library," says William & Mary junior Adam Drici. "There's even some decent coverage outside in some places. My main frustration with the WiFi at school is in the dorms. Wireless coverage in the majority of dorms is spotty. Last year in my dorm, there was only one transmitter for the entire building. Lots of students will actually just bypass the wireless completely and plug directly into the wall Ethernet port in the room because it's much more reliable than WiFi in the dorms. That's what I would always do."

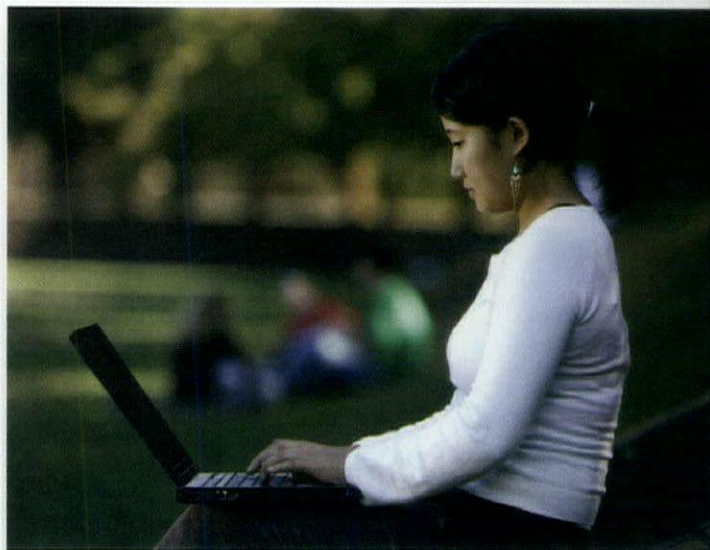
Handling the load affordably

William & Mary opted for a standard IEEE 802.11-compliant WiFi system transmitting over a, b, g, and now n frequencies. These systems are available from a number of enterprise companies. The university uses a Cisco system, Fenstermacher says. In putting the controllers, wires, and access points in place and maintaining them, his team has identified a range of lessons learned.

Because wireless is so popular, the user load can get very heavy. So, in addition to the need to test the effectiveness of the access points, the VLAN switching system has to be configured to optimize the use of available radio frequencies. One way William & Mary accomplishes this is to assign MACs to separate VLANs according to whether a student is a freshman or

sophomore (they share one VLAN), a junior or senior (they share another), or a faculty or staff member (who share yet another VLAN).

In addition, the six full-time people on Fenstermacher's team, with help from a student and a temp, prioritize access based on different types of use within the system's bandwidth. For instance, peer-to-peer traffic gets less priority than Web traffic. The new equipment in place also



Students and faculty alike prefer the convenience of wireless network access over wired connections.

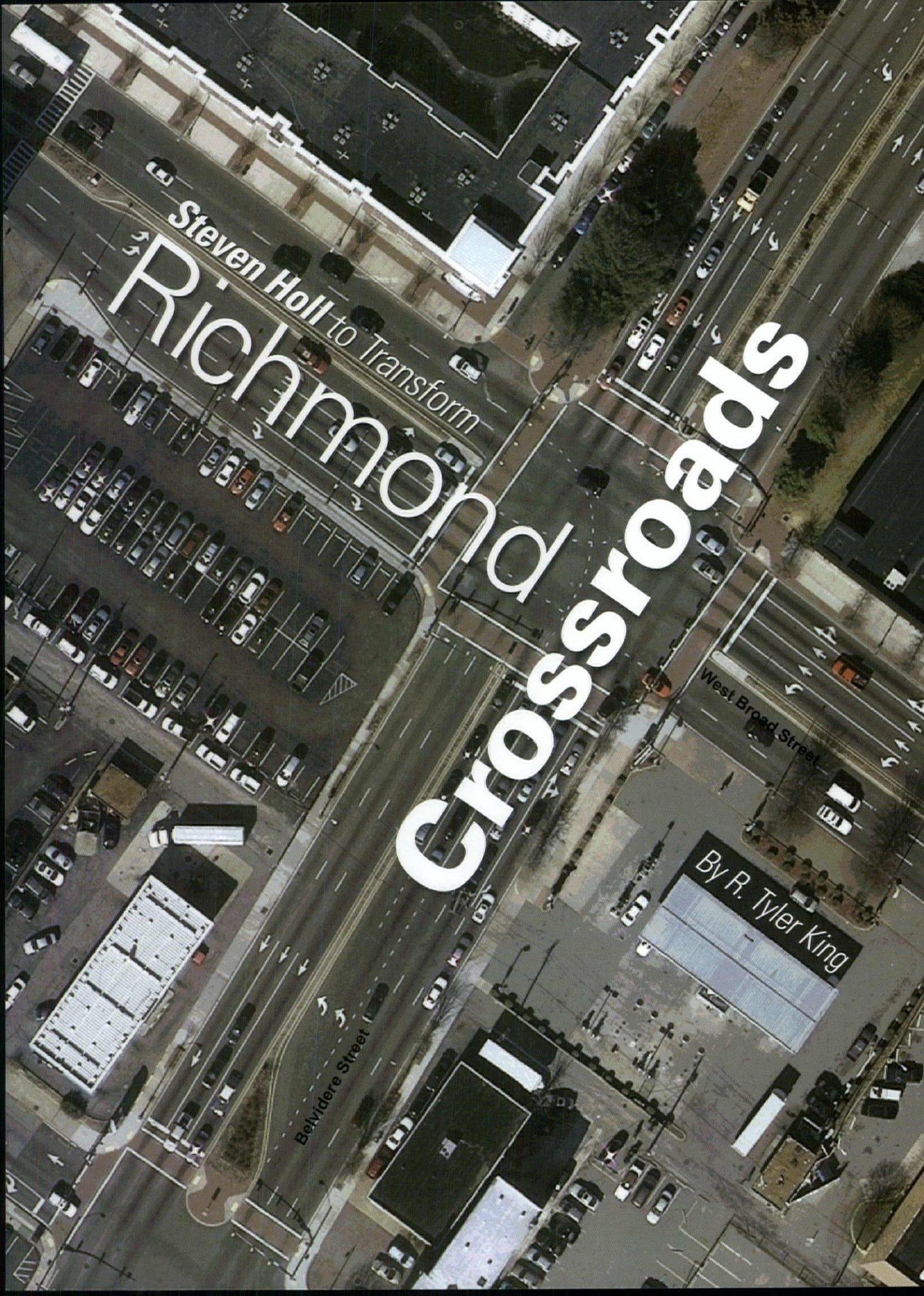
helps the system balance the loads on the a, b, and g frequencies. "A lot of monitoring of user load on the system is done on the wired side," Fenstermacher adds. "And there are a lot of companies available that will do that inherently."

As an aside, he further notes that power-over-Ethernet switches are the best way to go. "Our old ones weren't, our new ones are," he says. "The upgrade has been a huge benefit."

As the university replaces the system over the coming two years, Fenstermacher says he has learned that five years is probably the optimal replacement span to accommodate new 802.11 protocols and features as they take effect.

He also advises anyone else interested in emulating William & Mary's success to plan everything out on paper first and plan to install more units than you originally think is necessary, because use will definitely take off. "It's better to over-cover than under-cover when you start," he says, and concludes with one last important bit of advice: "I can't stress enough the importance of documenting everything that goes on."

—DEG



Steven Holl to Transform

Richmond Crossroads

West Broad Street

Belvidere Street

By R. Tyler King

This summer, Virginia Commonwealth University hired Steven Holl Architects to design a privately funded Institute for Contemporary Art at Richmond's most heavily travelled intersection. The sheer scale and central location of the university's Monroe Park campus, nationally recognized for its School of the Arts, already promises to reshape the city's fabric.

"It's going to be a game changer for Richmond," explains School of the Arts Dean Joe Seipel. Expected to open in spring 2014, the non-collecting institute, with its 32,000 square feet of program space, will bring cutting-edge international art to the area and activate the street scene with its cafe, bookshop, and auditorium.

It is a site that needs some inspiration, Seipel says of what is now a half-block parking lot. Holl's ICA will enliven a rather lackluster intersection that currently features a gas station, a drug store, and a dormitory. Seipel believes that strategic massing of the building could allow the university to allot 50 percent or more to open, green space, such as a sculpture garden.

"We were very attracted to the project, as we believe in the public potential of the arts as a positive urban catalyst," says Steven Holl. To illustrate how one might engage the streetscape with a museum of the arts, he cites his collaboration with Vito Acconci on the Storefront for Art and Architecture, a 1993 renovation that opened that gallery's long façade to the street with a series of movable and tilting concrete panels, thus literally opening the New York City art scene to the public.

Holl draws a parallel between that playfully inviting project at the juncture of SoHo, Chinatown, and Little Italy in Manhattan with the VCU site in Richmond. "Broad Street has a long history as the primary commercial corridor in Richmond," he says, "while Belvidere St. is the more recent urban manifestation of the crossing highway. We would like the building to feel open and inviting, while shielding the sculpture garden from traffic noise."

It is Steven Holl's luminous, porous designs that inspired VCU to commission him to breathe life into a busy but visually moribund Richmond crossroad.



Andy Ryan

Featured here from Holl Architects is a stairway from the New York University School of Philosophy (2007).

The ICA's potential for connectivity to the city extends beyond the Monroe Park campus, Seipel adds: "With the new Virginia Museum of Fine Arts addition and CenterStage performing arts center, the ICA will be one of those places that makes Richmond a destination city for the arts."

In keeping with this theme, the City of Richmond has tentatively branded the Broad Street corridor as an Arts District. "It's an excellent introduction to the city as people get off the highway," notes Joseph Whitfield, curator at a nearby gallery and a VCU Sculpture and Extended Media student. Moreover, the intersection is the gateway to Broad Street's monthly arts festival, First Friday's Art Walk. "It will be interesting to see how a piece of sculptural architecture can fur-

ther establish an already strong gallery culture in that area," Whitfield says.

With offices in Beijing and New York, Holl has designed museums and higher-education buildings globally. Over the past decade, especially, he has become recognized for luminous, porous buildings with sensitive connectivity to challenging sites. "What interests me so much about his design is that it is inventive, surprising, and creative, yet doesn't diminish what's around it. It pays respect, but adds a contemporary edge," Seipel says.

Though it is still too soon to release renderings of the ICA, the architect hopes to have schematic design approved this fall. How will Holl transform this crossroads for a budding university and city? Stay tuned.

Stand by Your Plan



After its first year following the fulfillment of a 1997 master plan, Duke University's Fuqua School of Business is a reinvigorated and well-honed tool for teaching that connects students and faculty to one another and the university as a whole. By adhering so faithfully to the master plan, Fuqua has greatly enhanced its identity and position as one of the nation's top-tier business schools.

Across 14 years and the tenure of three deans, one might think there would be major deviations from the master plan that Perkins + Will conceived to accommodate the school's original wish list:

- Increase the capacity of the school as a global, seven-day-a-week learning destination.
- Connect the school physically, visually, and aesthetically to the rest of the Duke campus.
- Upgrade the electronic connectivity of the facilities to meet and exceed student expectations.
- Prepare for future directions in business education.

In fact, the original master plan and the school campus as it now exists align perfectly. In maintaining a long-term adherence to this plan, it helped that the university's project management was consistent throughout, says Design Principal Jim Merriman, AIA, of the Perkins + Will Charlotte office. It also helped that the original vision was strong and self-evident as it was passed along from dean to dean.

A few plan elements were based on the Duke context of a Collegiate Gothic campus in the forest. The business school had always been closely tied to the Duke Forest, but they wanted also to match the campus more closely stylistically. They also wanted to re-orient to Science Drive to create a stronger entryway and establish pedestrian connections to the rest of the campus.



Breedon Hall provides a clear entry point to the business school complex from Science Drive, left. Above, the central mall continues the connection inside, introducing abundant daylight and views to the forest.

Lecture rooms are fully equipped with computer-to-video-projection connections to facilitate both face-to-face faculty-student interaction and presentations from remote locations.



The school also recognized that it needed a master plan for both growth and consolidation. "They were spread all over Durham, not just on campus," Merriman says. "So, more than anything, they wanted to be in one place. I would say the sheer need for physical place drove them more than anything. Within the site, the school successfully added facilities in three separate areas over time."

As the school grew—from 750 daytime students to 1,000—certain elements remained constant, such as the teaching model of 60- or 120-seat classrooms facilitating face-to-face student-faculty interaction. Teaching methods, though, changed significantly, Merriman says, referring to the gradual introduction of computer-linked video capabilities, small-group work areas, and research facilities.

The plan

The 1997 Fuqua master plan mapped out four elements of expansion, all of which Perkins + Will subsequently

designed: the addition of the Magat Academic Center for faculty office and support space, infill renovations, the addition of the Fox Student Center to support student activities and computer facilities, and the addition of Breedon Hall to expand classroom space and provide a stronger school identity via a stone entrance tower on Science Drive.

Elements of the Fox Center emphasize the business school's commitment to global learning through electronic media. Abundant natural light, views to the adjacent woods, a dining area, a student lounge, an indoor winter garden, outdoor terraces, changing rooms with lockers and showers, and a student communications center all contribute to the facility's draw, attracting students year-round. The center also connects to an administrative tower that includes the dean's suite.

Breedon Hall, completed in the summer of 2008, subtly merges Modern precast forms with the new stone entrance tower on Science Dr. Its three-

story atrium extends the existing mall and emphasizes the entryway. The building features an 18,000-sf library, three state-of-the-art lecture rooms, two large executive lecture rooms with telecommunications capability, a 28-team room suite, two multipurpose rooms that share a roof terrace, and three floors of staff offices. The building was designed to meet LEED® Silver certification requirements.

Continue to look to the future

"The very last enhancement the school undertook under this plan was to update the tele-presence suite," Merriman says. "We worked with a very capable construction management firm to get that work done over a Christmas break so the changeover was seamless to the students and faculty."

Even the dining facilities have become part of the overall learning environment, although it was the only thing that Merriman could think of that wasn't dead-on with the original program. "Food service is always an issue," he says. "Plus, with this facility, we faced the question: 'How do you get a 1,000-seat dining facility to feel okay when there are only 50 people having coffee early in the morning?' And there always seem to be real surprises that require facility updates when you study how people move through the serving area. I don't know if anyone will ever solve the complexities of those interactions perfectly."

The students approve wholeheartedly, though, according to an account from the April 2006 *Duke Magazine*:

"The Fox Center (provides) a central place where people naturally congregate [in a] dining room with tables, chairs, and sofas that double as seating and workspace; an indoor patio used for receptions; a food-service area; and a 24-hour snack bar. 'This isn't designed as a dining area,' observes [business-school student Joe] Spies, glancing at his surroundings. 'This is a social space that happens to have dining ... a place where people intersect, chaos occurs, and great ideas are generated.'"

For the future, Merriman says, the master plan continues in force as the school evolves. A need has been identified for another office wing, for example, as well as some renovation to a living facility and daytime center that provides space for conferences.

For now, though, this is one master plan that proved itself a win-win business proposition.

—DEG



Site Plan

- | | |
|-------------------------|----------------------|
| 1 Magat Academic Center | 4 Science Drive |
| 2 Infill Renovations | 5 Fox Student Center |
| 3 Breedon Hall | |

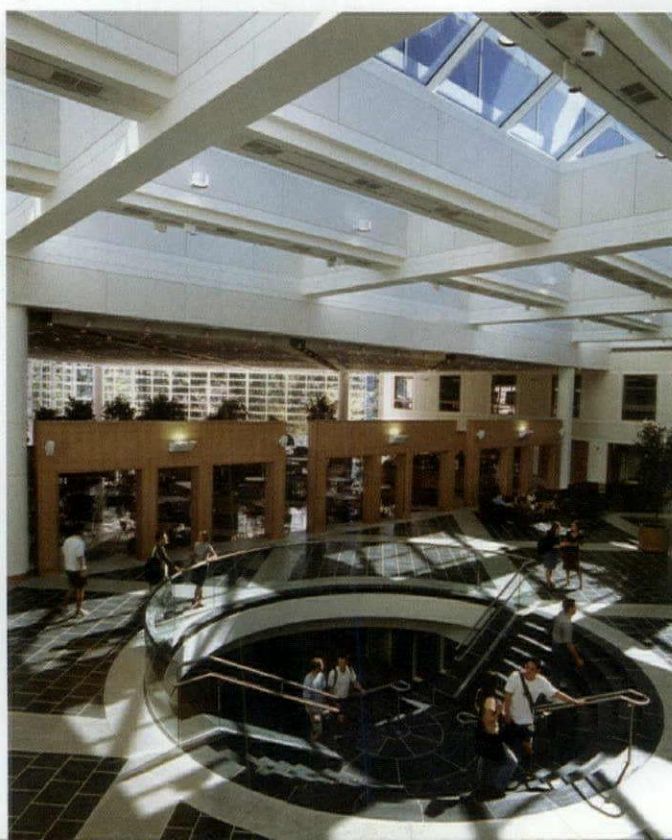


The 1997 master plan for Duke's Fuqua School of Business guided a multi-phase construction program that supports the school's goal to offer students a top-tier globally based learning experience.

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From the Magat Center, above, to the Fox Center Winter Garden, right, each phase derived from the plan's core purpose.





Virginia Tech Creates a Regional Cultural Destination

by Douglas Gordon, Hon. ALA

The new Center for the Arts at Virginia Tech has truly far-reaching goals for what was—until heavy excavation commenced in January—a rather quiet site dominated by a parking lot along the edge of the campus and abutting Blacksburg's North Main St. The Snøhetta-designed Center, combined with Blacksburg's Main Street Improvement Project, will be the capstone to the university's longstanding plan for a cultural district maintained jointly by Virginia Tech and Blacksburg.

The purpose of the new facility is to combine a traditional formal performance space with experimental Collaborative Performance Laboratory facilities to pursue learning, discovery, and engagement, drawing artists of international significance, says Center for the Arts Executive Director Ruth Waalkes. The center will also house the Institute for Creativity, Arts, and Technology (ICAT), a non-curriculum-based university-level

institute established in 2010.

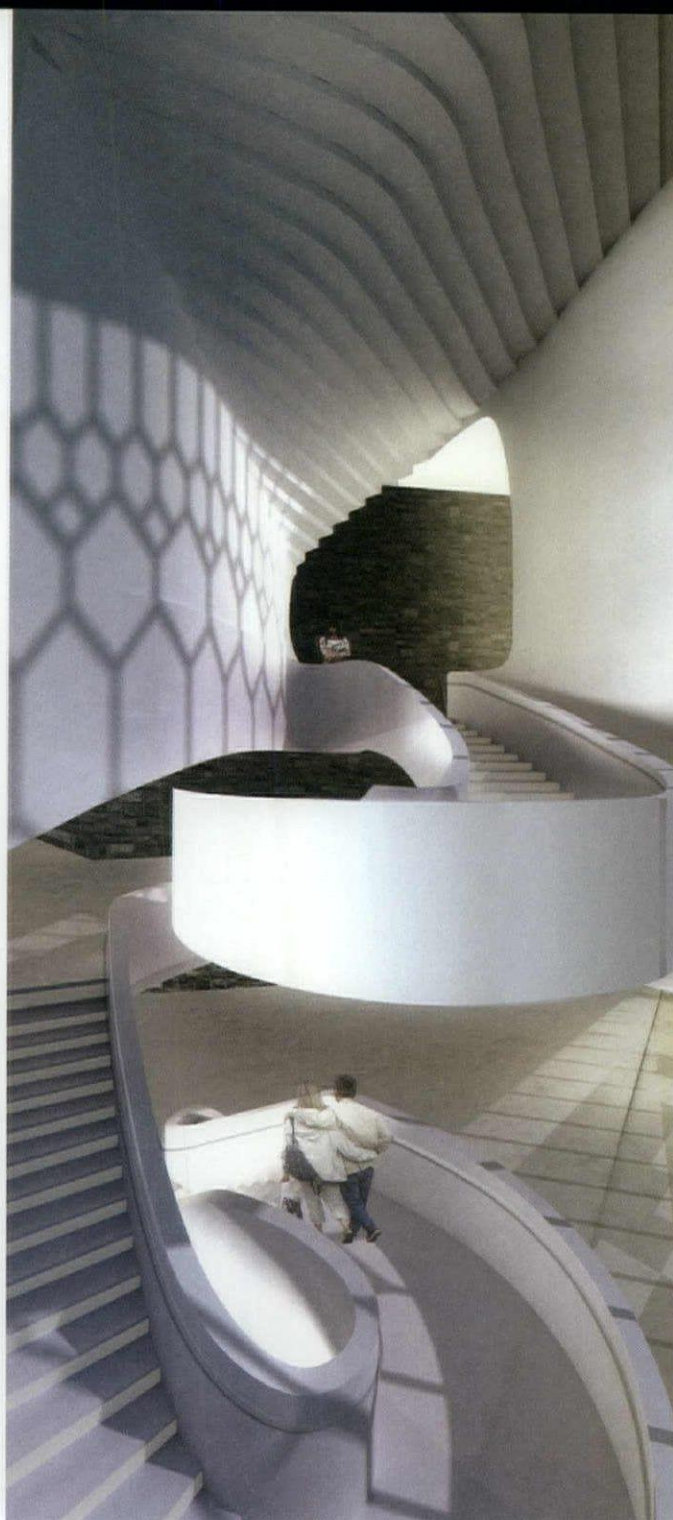
ICAT, with its 3,000-sf lab space and emphasis on developing models of arts education, particularly in preK-12 programs, will be unique among other institutions in the U.S., Waalkes says. "Especially with the construction now going on, it is really exciting. The students have lots of questions and ideas, and I've even had some say to me: 'Oh no, I'm going to have graduated by then,'" she says of the Center's tantalizingly close 2013 completion target.

In keeping with the mission of creating a world-class Center for the Arts facility, the university's campus development team decided early to request qualifications from internationally renowned designers. "With about 12 buildings on the boards and some rather large projects on campus, we were already drawing a high level of top-tier design teams," says Virginia Tech Staff



The Center for the Arts design incorporates the Virginia Tech Collegiate Gothic style into a cutting-edge combination of experimental arts-education labs and a 1,260-seat formal theater.

Renderings by Snøhetta, courtesy of Virginia Tech.



Architect Lynn Eichhorn, AIA. “We were also drawing very strong responses, in part, by advertising for project proposals in international publications. And it’s fortunate for us to have gotten so many good submissions for this project. The difficulty was narrowing them down to the ones we would interview.”

The architecture team that prevailed for the Center for the Arts includes Snøhetta, based in Oslo, Norway, and New York City, working with STV, headquartered in Douglassville, Pa., with 33 offices throughout the U.S. The general contractor is Holder Construction, based out of Atlanta. Arup is the acoustic engineering consultant.

Working within a regional context

When choosing the location for the Center for the Arts, the university considered several sites, including one that

was further from downtown but closer to the U.S. Highway 460 bypass, the main road linking Blacksburg with nearby Christiansburg and also I-81, the main conduit to Roanoke, Lexington, and other university cities along the western spine of Virginia. Instead, the planners chose the junction of the university’s Alumni Mall and Blacksburg’s Main Street as part of an overall goal to strengthen the connection between the campus and the town.

Certainly, the comprehensive facilities of the new Center for the Arts will allow the university to bring in programs that can be much better presented than they can now, Waalkes says. “But this is more than bringing in entertainment, as would be the case with a typical theater. In addition, we have a commitment to bring connection to the community, other parts of the campus, and our students. People in this community truly ap-



Creating a space that is at once engaging for university students and faculty and inviting to the public, Snohetta's design accentuates both the interior and exterior user experience.



The landscape design will also bring color and movement to this centerpiece of campus and town interconnection.

precipitate the intellectual and cultural connections that are possible in a facility that is part of a university," she says. "This new facility is really a welcoming beacon because it is so prominent. We see it as a destination that will draw people downtown to go to the restaurants and the Center as a natural confluence between the campus and the community."

The idea of making this part of the campus into a Virginia Tech cultural arts precinct dates back to 1994, recalls Virginia Tech Capital Project Manager Van Coble, AIA. Before the Arts Center, development of the district included a renovation of nearby Henderson Hall (the original president's house on campus) and the construction of Theater 101, a black box theater one street over on College Ave.

Those two earlier projects—designed by Moseley Architects, Virginia Beach, and Boora Architects, Portland, Ore.—were very successful and proved that the arts precinct concept could tie the university more closely to the surrounding community, Coble says. As a result, the cultural-district concept has gained substantial momentum, especially in the last six years. It was the resulting expansion of the scope of the Center for the Arts that subsequently led the university to advertise the project internationally, he says.

Of the importance of the new performing-arts and research facilities, Eichhorn says: "We have a highly innovative group who will be working in the building, and globally recognized people who will be performing there. It was very important to have an arts complex that itself was world class. Snøhetta demonstrated that they understood that need for excellence in

every detail of the exterior, interior, and landscape design. We wanted also to have the best acoustics, so we looked carefully at all the consultants that the A/Es submitted in their lists.

"Throughout the university, the administration is definitely very excited about seeing the completion of the Performing Arts Center," Eichhorn continues. "I think the location selection is perfect, especially since the performances are to include evening events. With the glow of the building and the flow of people it will attract, this is going to be a dynamic intersection."

In turn, Blacksburg shares this vision to attract activity along that stretch of Main Street, Eichhorn says. They plan a pedestrian streetscape improvement project that should be completed in 2012. The proposed widening of sidewalks and re-engineering of roads extends a half a mile from College Ave. to Prices Fork Rd. The town has already completed a park that is in front of what will become the Performing Arts Center and has enhanced the pedestrian aspects of the town, Eichhorn says.

"The Center will still be on the periphery of the campus, which is an embodiment of the intent throughout the cultural precinct," Coble notes. "I think this is an ideal location." The project did displace an open parking lot at the site. (Relocating parking is one aspect of an overall campus master plan.) "So we're building a new parking garage nearby on Turner Street that will serve this facility and the university at large," Coble says. "That lot is a private/public project between the university foundation and a local developer, and that will open the same time as the Center for the Arts."



With acoustic engineering from internationally renowned Arup, every interior detail, from seating to wall and ceiling treatments, is designed to maximize the audience experience within the theater across a wide spectrum of performing arts presentations.

Working within a campus context

In the larger sense, the Center for the Arts has been in the offing for many years, as is evident in the 2006 campus master plan designed by Hanbury Evans Wright Vlattas + Company. As Virginia Tech Vice President for Administrative Services Sherwood G. Wilson, PhD, writes of that plan's underlying purpose, this plan is about the university becoming a top inter-disciplinary research institution. In the process, it is experiencing a physical shift from a primarily rural campus to an emerging urbanized central campus. Part of accommodating that emergence and retaining pedestrian connectivity is to consolidate the academic core of undergraduate facilities and, through the emerging cultural district, tie that academic core to Blacksburg's plan for growth.

As referenced on the previous page here, the pedestrian-friendly extension of Old Main St. that Blacksburg has proposed from College Ave. to a new traffic circle at Prices Fork Road goes directly past the Center for the Arts site. With both the town and the university working toward the same goal of attracting foot traffic to the area, this stretch of North Main St. is destined by design to become a town-and-gown centerpiece.

In fact, the entire Upper Quad will see considerable change under the 2006 master plan. The Upper Quad is the oldest quadrangle on the Virginia Tech campus and, in some respects, the least planned. Many of the buildings there will lose their identity, if not face outright demolition. "They don't make effective use of the Upper Quad right now," says Coble. He explains that the buildings currently there are generally too small, and, being mostly brick, do not fit the Collegiate Gothic style established around the Drillfield, which dominates the central area between the upper and lower quads of the school's academic core.

Another large part of the university's Collegiate Gothic campus identity is its ubiquitous Hokie Stone, a multi-hued

limestone quarried nearby that has been used throughout most of the 20th century to clad Virginia Tech buildings. The Center for the Arts design originally featured only metal exterior cladding, which, at the behest of the Board of Visitors, Snøhetta modified to include Hokie Stone while still retaining the building's clean contemporary lines.

The Upper Quad is also associated deeply in the school's tradition with the Virginia Tech Corps of Cadets. One of those traditions involves formations to and from dining at Shultz Hall. As the corps has grown, though, the dining facility has become inadequate, and a new dining hall is planned for nearby Turner St., with a spring 2012 completion target. But Shultz Hall will not be torn down, despite the fact that it sits in the middle of the site for the new arts center. Instead, the arts center design incorporates the old structure into the new Center for the Arts. (Building reuse is one part of the project's bid for LEED® Silver certification, a requirement now for all new facilities built at Virginia Tech.)

While waiting for the new dining hall, the Corps of Cadets will continue to take meals in Shultz despite the noise and disruption of construction. "The Corps of Cadets has accepted this challenge very stoically, despite the ongoing construction," Eichhorn says. "The Corps is heavily involved in the vision of this project." Cadets will continue to use adjacent areas for formations and drills, she says: "Their traditions are still there."

"The existing Shultz Hall will be fully repurposed as part of the overall Center for the Arts facility," Waalkes says. "It will lose its name and individual identity and instead will become the part of the overall complex that houses the visual arts galleries, creative technologies studios, and back-of-house operations for the Performance Hall. Those spaces and the new construction for the CPL and Performing Arts Center will flow together as one cohesive Center for the Arts."



The building itself will be a beacon attracting people to evening performances from across the region. Lessons learned from the laboratory facilities will also support research into the development of preK-12 arts education programs.

Where the Center is and where it's going

The university held the groundbreaking ceremony June 21, 2010, and preliminary site improvements started the following August, Coble says of the very beginning of construction. Excavation began in earnest at the beginning of 2011, and the construction documents were 100 percent complete this past August 1, he says. The project is on a fast track to meet its 2013 completion goal.

The structure is steel-reinforced concrete, Coble says of the primarily traditional construction. What is not so traditional is the computer modeling of the building. Holder is assembling the building-information model (BIM). And even though some of the consultants are not able to work in BIM, the university's Board of Visitors decided that BIM was optimally cost effective, so, where necessary, construction documents are created in AutoCAD and then incorporated into the building-information model. Holder will turn the BIM files over to the school at the end of the project. It costs quite a bit to put all this information in at the outset, Coble says. In the end, though, Virginia Tech will reap the benefits of the work Holder is putting into the computerized building model, he says.

According to the Virginia Tech News service, the budget for the Center for the Arts at the beginning of 2011 was \$94 million. Roughly a third of that is coming from the university, a third from the state, and a third from private donations.

Staying on budget apparently will remain a challenge, though. Although the site location is universally acclaimed as ideal, site conditions for construction pose problems. Already the setting of caissons in the soil has been difficult, Coble reports. This is the largest construction project on campus to date, he says, and the ongoing value analysis is being watched very carefully.

Quality control is unerring nonetheless. For example, the engineering consultants deemed the seating layout to be less than ideal for the acoustics of the performance space. The solution was

a rather remarkable decision to remove 40 seats, taking the theater down from 1,300 to 1,260 seats, according to a Tech News report.

The overarching vision remains on track as well. "The basic organization of program element, zoning of uses, and the concept of highly transparent public spaces that engage the landscape have all remained constant," says Z. Scott Hurst, AIA, who, although retired as a Virginia Tech staff architect, remains active on this project. He describes the original design goals that still remain true: "The performance hall is a formal, more traditional performance space with fixed seating. It is planned to perform at a high level regarding acoustics, sight lines, and lighting control. Because it is a formal performance hall, the functionality of public/performer circulation and appropriate support spaces also is critical. The CPL is very focused on the experimental and, as such, it is designed for a high level of flexibility in terms of acoustics, lighting control, integration of technology, and relationships between audience and performer."

With this project, the architects, consultants, and a highly sophisticated client are working together to create much more than the sum of the building's parts.





Between Master Plan and Construction Come **Teamwork and Flexibility**

26

by Douglas Gordon, Hon. AIA

Even the simplest of projects requires intense preparation and close interactive relationships among the client, developer, and design professionals. But when time is tight, project budgeting is contingent on public and private investments, and programmatic goals are spread among many shareholders, a master plan has to be especially flexible as it sets in motion fundamental design principles that will carry the project through to construction and occupancy.

The Newport News Apprentice School of Shipbuilding is just such a case study in rapid response to complex and fluid programmatic needs. Faced with a desire for more space, consolidation of instructional facilities, and an upgrade of its computer-aided tools, the school's overseeing entity, the Newport News Shipyard, developed a bid package that included partnerships with the city and state.

Newport News Shipyard President Matt Mulherin says the new school will take its instructional facilities from chalkboards to computerized technology, and its location and mixed-use public/private development partnership will bring new life to the school and, as a catalyst, to the city of Newport News.

The apprentice school has long been a part of the Newport News Shipyard structure, training the talent on which the shipyard has depended for 92 years. (The latest major project the shipyard is working on is the super carrier USS Gerald R. Ford.) In turn, the city owes a large part of its very existence to the shipyard.

Over the past several years, the City of Newport News has been looking for a means to reinvigorate its downtown, recounts Charles T. Outlaw II, Assoc. AIA, a designer with Rancorn

Wildman Architects, the architect of record for the Apprentice School now in development. The design and development team also includes the Perkins + Will Charlotte office as design architect and Kimley-Horn and Associates as the civil engineer.

Among the three sites studied for the project, the one selected is in the city center, situated between a main entrance to the shipyard and a newly occupied, five-acre housing complex owned by the Navy. The site is ideal because it has the potential to become a crossroad between the naval facilities and the shipyard, Outlaw says.

The Apprentice School itself is one part of a public-private development proposal by Armada Hoffer Development Co. and has included the Newport News Shipyard and the city with grant support from the Commonwealth of Virginia. The intent was to support the shipyard's goal of increasing its production capacity while helping the city bring additional life to the downtown area. The project master plan comprises a parking facility, street-level retail shops with market-rate housing above, and additional housing units behind the school. The housing is intended for students, shipyard employees, and Navy personnel stationed at the shipyard.

It all starts with a plan

The development team hit the ground running in 2010 as the designers assembled various iterations that would be flexible enough to accommodate whichever of the three sites would ultimately be selected, would represent the nautical nature of the educational facility, and would tie it into both the shipyard and adjacent areas of the city.

Computers may make a schematic design look final, but that's an illusion. Schematics aren't over till all the pieces fit the client's business plan.



The client provided a facility program they had developed as part of their RFP process, which included a preliminary floor plan. Still, as a competition, there was no contact with the client, which required the design team initially to make a lot of assumptions during an intense three-week charrette. "That gave us a week to develop the site concept, a week to design, and a week to prepare the specified competition documents for delivery to the shipbuilders," recalls Perkins + Will Design Principal Jim Merriman, AIA. "It wasn't until after we won the competition that we could work closely with the Shipbuilding administration and conduct the formal programming process."

During that flurry of activity, the design team used a combination of solid models and computer-aided design tools, including Sketch-Up and Revit. "Oddly enough," Merriman says, "the master plan and the housing are in Sketch-Up and the academic building is in Revit." The team members worked with what they had available and felt comfortable using, he says. "We are teaming with Rancorn Wildman, so we have their management assistance as well. Because we are pursuing a LEED® certification, we all paid a good deal of attention to that from the outset, too."

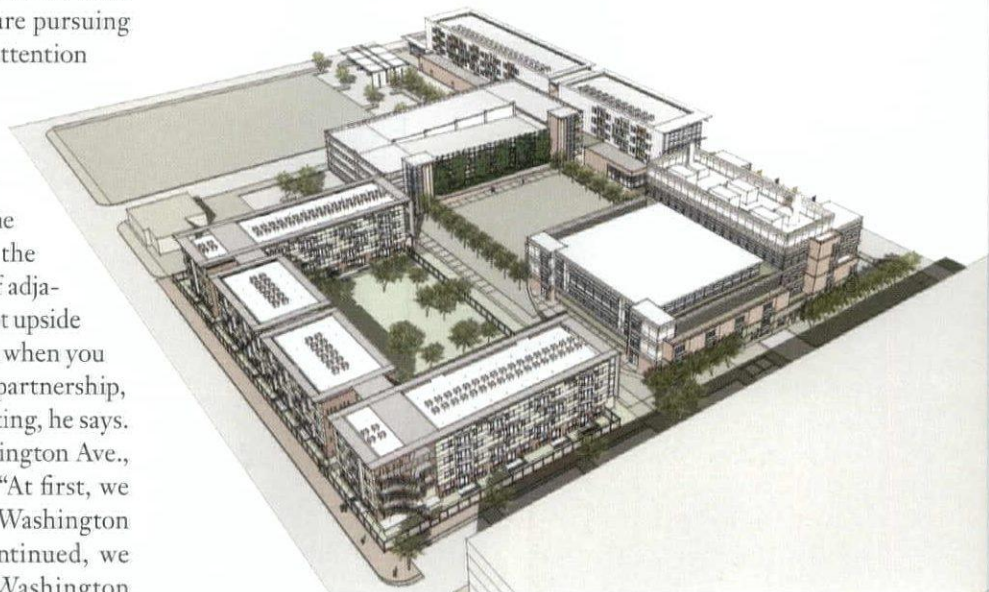
The development team has developed four schemes since the beginning of 2011. Over the summer, they completed the final schematic design and were organizing the financing. While the design team was working through the schematics, the developer was able to acquire another half block of adjacent property, which turned the original site concept upside down, notes Merriman. This is the process you get when you combine academic facility design and a developer partnership, which is what makes this project particular interesting, he says.

The site is bordered on the east side by Washington Ave., an important thoroughfare for Newport News. "At first, we placed the parking lot over the street retail along Washington Ave.," Merriman explains. "As negotiations continued, we flipped the diagram and moved the school to Washington

Ave., with the housing looking back toward the shipyards. We continue to refine the layout of the components to maintain the diagrammatic clarity of the initial proposal. This constant refinement is a fact of life when you have a lot of players.

"A lot of our design thought focused on the complexity of the docks, the linearity of the shipbuilding process, and the overall industrial aesthetic," Merriman says. "The design team wanted the complex to feel nautical and a part of the shipbuilding process. The design we envisioned also allowed people to see into the day-to-day workings of the school."

Glass and exposed steel further convey the industrial nature of the area. "The inside layout also derives from the move to transparency and flexibility we see in academic facilities of today," Merriman says. "We try to get the edges of the classroom to move out of the classroom. These elements of the parti have continued to hold true and have stayed consistent throughout schematic design," he says.



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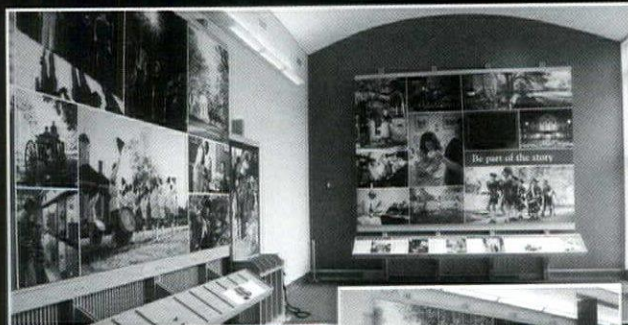
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Hall, Washington D.C.; MTF Architecture, TDBank, Georgetown Branch, Washington D.C.; Susan Gulick Interiors, Gulick Condo, Reston, Va.; TishmanSpeyer/KrueckSexton/HITT, 1730 Pennsylvania Avenue, Washington D.C.; SmithGroup, Salvation Army, Washington D.C.; Clark Nexsen Washington D.C. Offices, Washington D.C.

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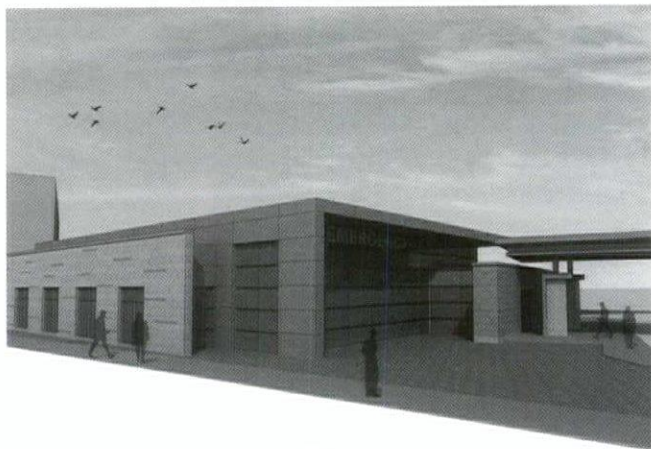


Architect: Clark Nexsen Architecture & Engineering, Norfolk, with Barton Malow

Project: South Halls Renovation, The Pennsylvania State University, University Park, Pa.

Renovation of four 68,000-sf residence halls for 1,000 sorority students. Includes a "facelift" to the College Avenue façade of the complex and an expansion of the Redifer Commons. Tel: 757.455.5800 / www.clarknexsen.com

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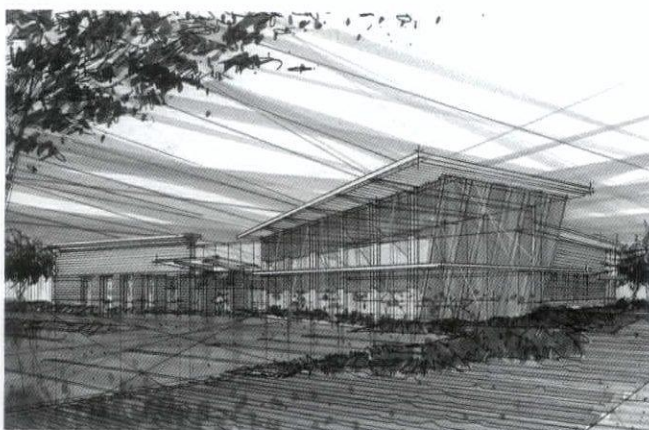
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The 141,500-sf school will serve approximately 940 students and will feature green building strategies that will allow educators to use the building as a teaching tool. Tel: 804.794.7555 / www.moseleyarchitects.com



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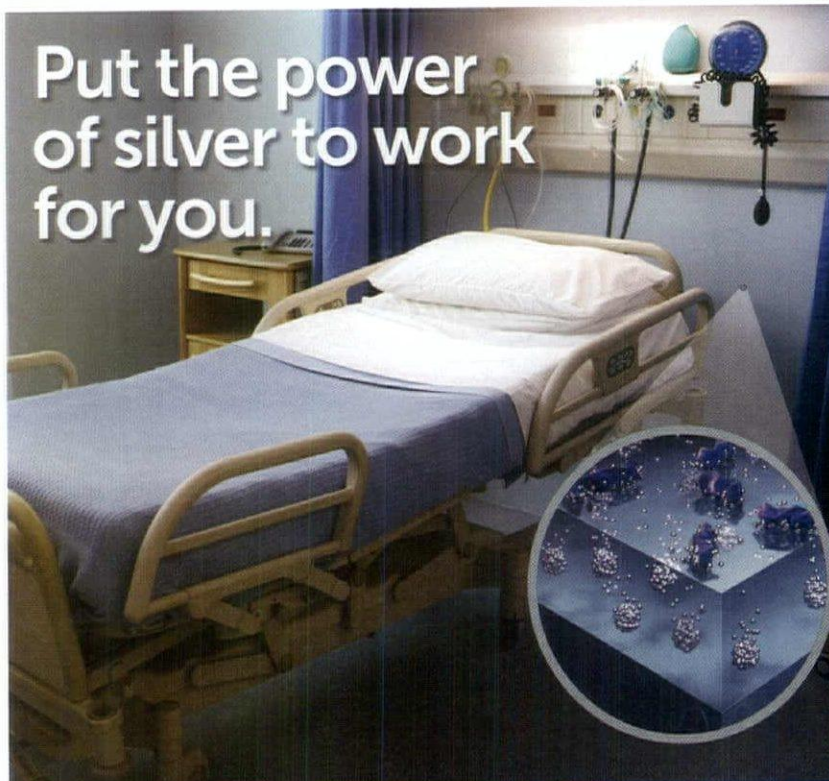
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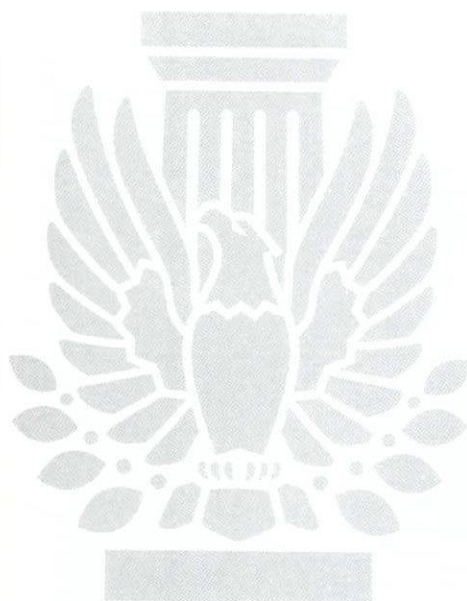
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Taking Note

There are many benefits to using off-site technology for construction: notably, much less waste than site built construction, higher quality control, less likelihood of moisture and mildew, and significantly fewer carbon emissions.

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Places like Japan and Sweden are far ahead of the U.S. in using technology and innovation in construction. In those countries, if you are doing a high-end home, you want it built in a factory. In the opinion of Michelle Kaufmann, who sees prefabrication as a key solution to the wastefulness of U.S. home-construction practice, the U.S. is decades behind mostly because people confuse prefabrication with HUD Code transportable manufactured housing (trailer homes), which is very different. Housing built to the minimum requirement of the HUD Code is not typically considered real estate and requires special zoning. Modular homes, however, are built to the code of the site's jurisdiction but in a controlled environment. Modular is considered real estate and is appraised against other custom homes.

"The great thing about us being so far behind in the U.S. is that it is an extremely exciting time for us to innovate," Kaufmann says. "There is so much room for improvement in areas architects want to work in and where we can really make a difference."

Prethink Sustainability and Affordability

As for the solid construction of modular houses, Kaufmann, based in Northern California, offers this thought: "When you build a home that goes down the road, you have to make it super solid. It basically goes through the worst earthquake of its life before it even gets to the site, so we have to design them to be really strong. This means you have a sturdy home that will last a lifetime."

A prefabricated home can be more sustainable than a site built home if you are working with conscientious manufacturers and builders. (Kaufmann prefers Blazer Industries in Oregon, for example.) A modular home that incorporates pre-packaged, resource-efficient technologies can create its own energy, use a third of the water of a standard home, and feature healthy finishes and systems.

"It is no longer a question of *if* people want sustainable homes. They do. But they want their homes built affordably, punctually, and easily," Kaufmann stresses.

What are the challenges ahead? "The people who have been working in the factories for decades have the technical know-how, but they have been working on a high-volume, low-margin business model, Kaufmann says. Such a mindset favors repetitive patterns and baseline quality targets. Manufacturers do have the capability to build thoughtful designs with smart materials and systems, and she anticipates an exciting time with these companies partnering

with architects as a matter of course.

As a guiding model, Kaufmann refers to two AIA Gold Medalists with whom she has worked in the past: Michael Graves, FAIA, and Frank Gehry, FAIA. Both are world-renowned architects who have designed mass-produced products (for companies such as Target and Tiffanys), and their success got Kaufmann interested in thinking about shifting the strategy to the manufacture of housing.

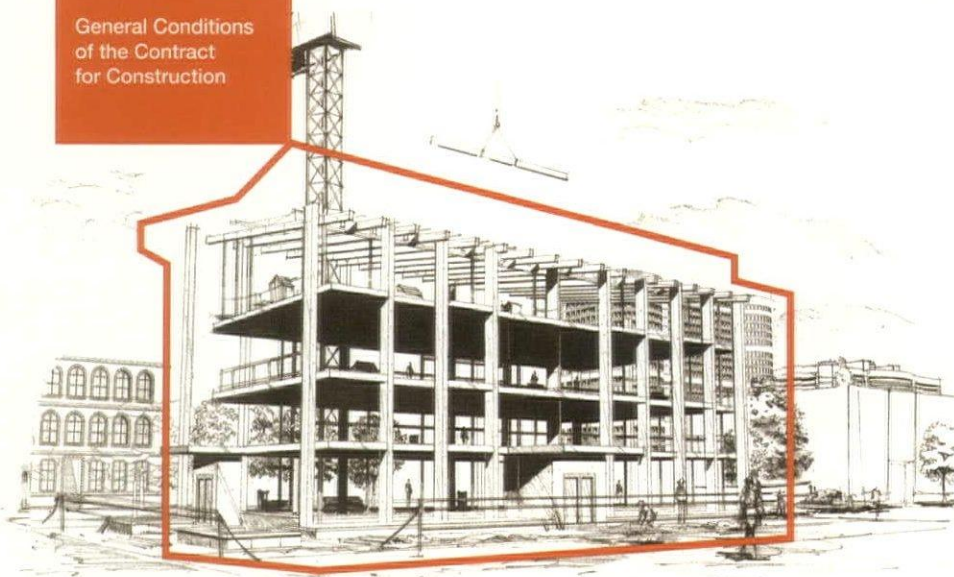
"First, though, it is important that we as architects make sure we understand the factory process so our designs maximize the production efficiencies. The best results are from a true collaboration between the architects and the gurus in the factories," she says.

She references Edwin Chan (who worked at Gehry's right hand for many years before recently started his own practice). "Edwin always made sure our team worked with the contractors as early as the design development phase to come up with the best ideas for fabrication," Kaufmann recalls. "It was much more of a team collaboration than design-bid-build. Understanding how the fabricators work, and where their lean construction methods are most efficient, helps guide our design strategies to come up with the very best solutions."

Illustrated here is Kaufmann's design for the modular Smart Home, which features integrated systems for energy and water conservation, passive air circulation, and site orientation for maximum daylighting.

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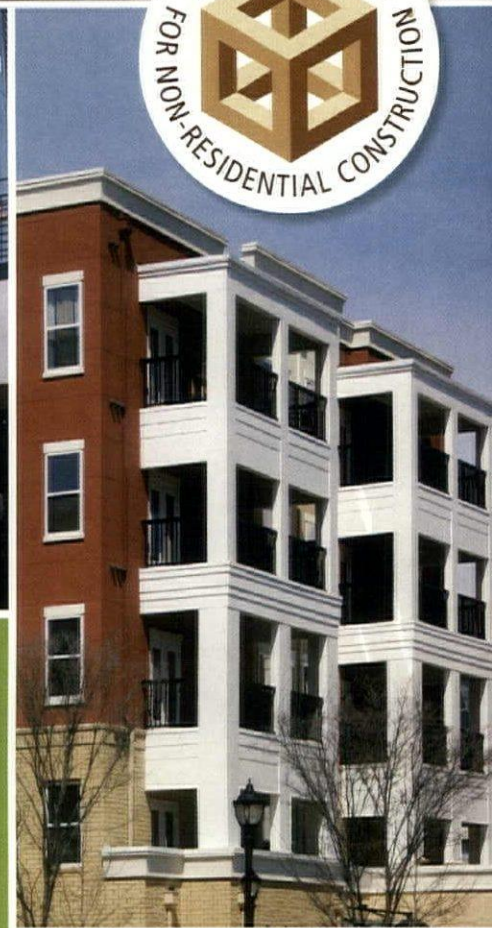
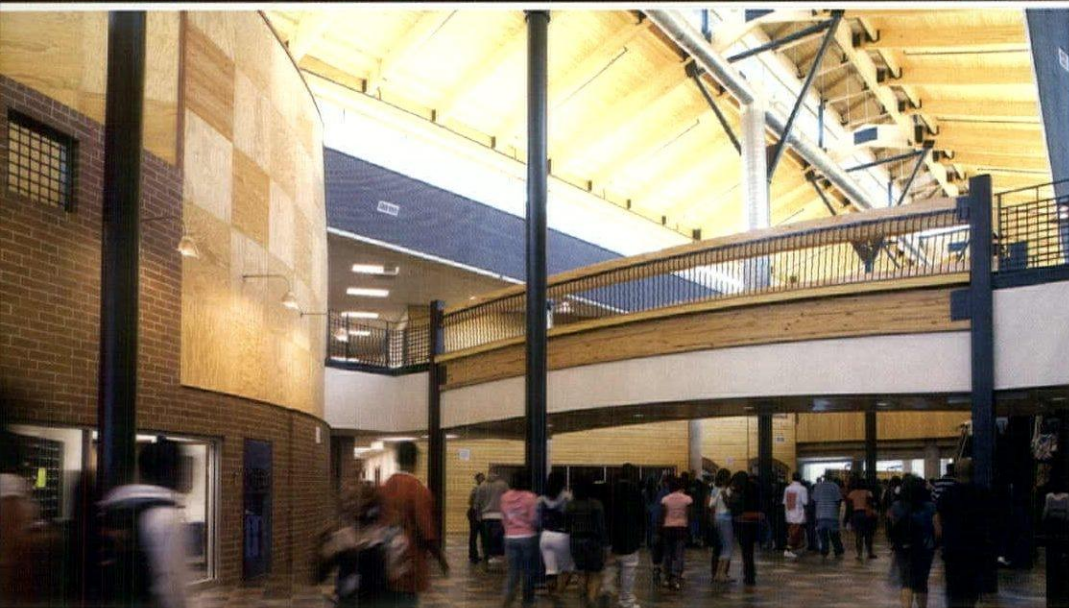
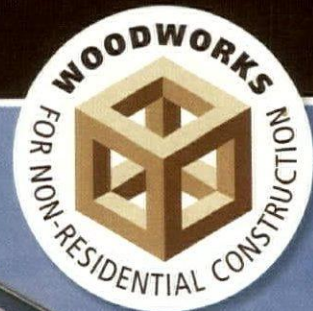
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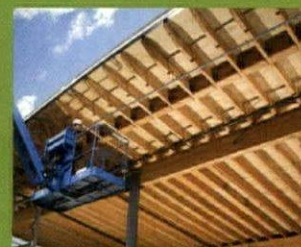
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